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(54) PERCUTANEOUS ABSORPTION CATAPLASM

(57)Abstract:
PURPOSE: To obtain a percutaneous absorption cataplasm capable of developing an anesthetic effect in a short time after attaching by laminating a tacky agent layer consisting of a tacky agent, lidocaine, isopropyl myristate on one surface of a support.
CONSTITUTION: This cataplasm is obtained by laminating a tacky agent layer consisting of 100 pts.wt. of a tacky agent [e.g. a (meth)acrylic acid alkylester copolymer], 5-100 pts.wt. of lidocaine which is a local anesthetic and 5-150 pts.wt. of isopropyl miristate on one surface of a support [e.g styreneisoprene- styrene block copolymer]. Further, an organic acid, a fatty acid ester, surfactant, amine amide, etc., may be added to the tacky agent layer. Since percutaneous absorption of the local anesthetic is promoted by adding isopropyl miristate to the tacky agent layer, anesthetic effect can be obtained in a short time and the cataplasm causes no deposition of crystals in the tacky agent or leaves no paste on the skin. The cataplasm is used for local anesthesia in arteriovenous indwelling catheter treatment before operation and local anesthesia before dura or lumbar puncture, arthrosis puncture or small operation of skin to remarkably relieve pains of patients.

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CLAIMS

[Claim(s)]

[Claim 1] The percutaneous absorption pasting agent characterized by carrying out the laminating of the binder layer which becomes the whole surface of a base material from the binder 100 weight section, the lidocaine 5 which is a local anesthetic - the 100 weight sections, and five to myristic-acid isopropyl 150 weight.

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DETAILED DESCRIPTION

[Detailed Description of the Invention]
[0001]
[Industrial Application] Especially this invention relates to the percutaneous absorption pasting agent used for toponarcosis about a percutaneous absorption pasting agent.
[0002]
[Description of the Prior Art] Various proposals are performed as a method of prescribing a local anesthetic for the patient. In order to prescribe for the patient the anesthetic which has antibacterial through the skin or a mucosa, the medical device which consists of a backing element arranged behind the self-adhesive property matrix which the local anesthetic is distributing to the whole, and the skin distance side of this matrix is indicated (JP,1-299215,A).

[0003] Moreover, it consists of a pressure sensitive adhesive layer which contains the local anesthetic prepared on a flexible support and this support 40 to 65% of the weight, and the percutaneous absorption tablet in the ratio of the amount (Ac) of un-dissolving of a local anesthetic and the amount of dissolutions (As) which are contained in this pressure sensitive adhesive layer, and the range of Ac/As=0.1-1.8 is indicated (JP,4-208229,A).
[0004] However, since the non-melt of an effect-of-a-medicine component was distributing in the binder, when removing each of above-mentioned medical devices and percutaneous absorption tablets after sticking on the skin, they had the trouble that an effect-of-a-medicine component remained on the skin. Moreover, since the crystal of an effect-of-a-medicine component deposited in a binder, there was a trouble that appearance was bad and adhesiveness fell.
[0005] Furthermore, the lidocaine content external application pasting agent characterized by preparing the medicine maintenance layer which added a lidocaine or its salt one to 10% of the weight to the adhesive gel basis which consists of the water-soluble-polymer matter, water, and a moisturizer on a base material is indicated (JP,4-305523,A). However, it seldom dissolved in water, but the lidocaine had the trouble that a crystal deposited, in water soluble base, when the lidocaine was added in large quantities. Moreover, although a lidocaine salt tended to melt into water, it was hard to absorb it from the skin, and it had a problem in respect of immediate effect nature.
[0006]
[Problem(s) to be Solved by the Invention] this invention is made in view of the above-mentioned fault, and the purpose is in offering the percutaneous absorption pasting agent which carries out an onset of anesthesia in a short time after pasting.
[0007]
[Means for Solving the Problem]
[0008] The laminating of the binder layer to which the percutaneous absorption pasting agent for toponarcosis of this invention becomes the whole surface of a base material from a binder, a lidocaine, and a myristic-acid isopropyl is carried out.
[0009] As the above-mentioned base material, for example Polyethylene, polypropylene, polystyrene, Polyurethane, nylon, polyvinyl alcohol, a polyamide, a polybutadiene, A polybutene, a polyisoprene, silicone resin; A plasticized polyvinyl chloride, Vinyl chloride system resins, such as a polyurethane system plasticized polyvinyl chloride and a plasticization vinyl acetate-

vinyl chloride copolymer; An ethylene vinylacetate copolymer, Ethylene system copolymers, such as an ethylene-vinyl chloride copolymer and an ethylene-methyl-methacrylate copolymer; (meta) Acrylic-acid alkyl ester, A styrene-isoprene-styrene block copolymer, a styrene-butadiene-styrene block copolymer, A film or sheets, such as a styrene-ethylene-butadiene-styrene block copolymer, a styrene butadiene rubber, cellulose acetate, and an ethyl cellulose, are mentioned. the above-mentioned film or a sheet is independent -- or you may use it, carrying out a two or more sort laminating

[0010] The thickness of the above-mentioned base material has desirable 10-500 micrometers, and it is 25-100 micrometers more preferably.

[0011] Although there is especially no limit, for example, binders, such as acrylic, a rubber system, and a silicone system, are usable if the myristic-acid isopropyl mentioned later is dissolved as the above-mentioned binder, the thing of acrylic and a rubber system is especially desirable.

[0012] As the above-mentioned acrylic binder, what makes a principal component an acrylic-acid (meta) alkyl ester copolymer is desirable, and what makes a principal component a styrene-isoprene-styrene block copolymer, a styrene butadiene rubber, a polybutene, a polyisoprene, isobutylene isoprene rubber, natural rubber, etc. is desirable as a rubber system binder.

[0013] moreover, the above-mentioned binder -- a solvent system, an emulsion system, and a hot-melt system -- any type is usable

[0014] The above-mentioned (meta) acrylic-acid alkyl ester copolymer has the desirable copolymer of the fatty alcohol of carbon numbers 1-18, the acrylic-acid alkyl ester monomer obtained from an acrylic acid (meta) (meta), and a ** (meta) acrylic-acid alkyl ester monomer and the polymerization nature monomer which can be copolymerized.

[0015] As the above-mentioned (meta) acrylic-acid alkyl ester monomer, a methyl acrylate (meta), an ethyl acrylate (meta), a butyl acrylate (meta), isobutyl acrylate (meta), an acrylic-acid (meta) hexyl, an acrylic-acid (meta) octyl, acrylic-acid (meta)-2-ethylhexyl, an acrylic-acid (meta) iso octyl, an acrylic-acid (meta) dodecyl, etc. are mentioned, and these one sort or two sorts or more are used, for example.

[0016] As the above-mentioned polymerization nature monomer, an acrylic acid (meta), N vinylpyrrolidone, diacetone acrylamide, ethylene glycol (poly), an acrylic-acid (meta) polypropylene glycol, acrylic-acid (meta)-2-hydroxyethyl, vinyl acetate, styrene, etc. are mentioned, for example.

[0017] The above-mentioned (meta) acrylic-acid alkyl ester copolymer is conventionally prepared by well-known polymerization methods, such as solution polymerization and a bulk polymerization.

[0018] Tackifiers, such as an alicycle group system hydrocarbon resin, a terpene resin, and a rosin resin, liquid rubber, a softener (for example, liquid paraffin), an antioxidant, etc. may be added by the above-mentioned rubber system binder if needed.

[0019] When it is used as a local anesthetic and the addition decreases among the pasting agent of this invention, sufficient anesthesia effect is not acquired, but since the above-mentioned lidocaine deposits in a binder as a crystal if it increases, it is limited to the 5 - 100 weight section to the binder 100 weight section, and is 20 - 90 weight section preferably.

[0020] Since sufficient percutaneous absorption is not acquired upwards, a lidocaine deposits in a binder, if it is used as a penetration enhancer and the addition decreases, and it will become difficult for a binder layer to become soft too much and to hold a configuration if it increases, the above-mentioned myristic-acid isopropyl is limited to the 5 - 150 weight section to the binder 100 weight section, and is the 10 - 140 weight section preferably.

[0021] In the percutaneous absorption pasting agent of this invention, in order to promote the percutaneous absorption of a lidocaine, an organic acid, fatty acid ester, a surfactant, an amine amide, etc. may be added in addition to the above-mentioned myristic-acid isopropyl.

[0022] As the above-mentioned organic acid, oleic acid, a lactic acid, a palmitic acid, an amber acid, a myristic acid, a undecylenic acid, a PARAOKISHI benzoic acid, etc. are mentioned, for example.

[0023] As the above-mentioned fatty acid ester, a myristic-acid millimeter still, a myristic-acid octyl dodecyl, A methyl myristate, the cetyl palmitate, a palmitic-acid retinol, A palmitic-acid isopropyl, a methyl palmitate, a methyl laurate, Monohydric-alcohol ester, such as a methyl caproate; A monochrome oleic acid glycerol, A monochrome capric-acid glycerol, a JIOREIN acid glycerol, a monostearin acid propylene glycol, Polyhydric-alcohol ester, such as a deca oleic acid deca glycerol; annular polyhydric-alcohol ester, such as monostearin acid sorbitan, monochrome lauryl acid sorbitan, monochrome oleic acid sorbitan, triolein acid sorbitan, and palmitic-acid ASUKORUBIRU, is mentioned.
[0024] Moreover, as fatty acid ester other than the above, a lactic-acid cetyl, a lactic-acid millimeter still, a gallic-acid n-propyl, an adipic-acid diisopropyl, a sebacic-acid diethyl, a methyl benzoate, methyl parahydroxybenzoate, a PARAOKISHI benzoic-acid dodecyl, etc. are mentioned.
[0025] as the above-mentioned surfactant, POE addition products, such as the polyoxyethylene (it is called Following POE) (2) lauryl ether, a POE(10) oleyl amine, POE (5) oleic amide, the POE(10) nonylphenyl ether, and POE(2) monochrome laurate, etc. should raise, and be -- **
[0026] As the above-mentioned amine amide, lauroyl diethanolamide, lauroyl sarcosyl, lauroyl sarcosyl sodium, lauryl sulfuric-acid triethanol, etc. are mentioned.
[0027] The addition of the above-mentioned organic acid, fatty acid ester, a surfactant, and an amine amide is suitably determined by the kind of binder etc.
[0028] The composition of the percutaneous absorption pasting agent of this invention is as above-mentioned, and the manufacture can use the manufacture method of a well-known adhesive tape conventionally. The example of representation is a solvent coating method, in addition a hot-melt coating method, an emulsion coating method, etc. are raised. When performing solvent coating, solvents, such as the specified quantity and ethyl acetate, are made to dissolve or distribute a binder, a medicine, and a penetration enhancer, and after applying and drying on the method of applying on a base material and drying the obtained liquid, and a releasing paper, the method of imprinting on a base material etc. is used suitably.
[0029] Although it is not limited, since especially the thickness of the above-mentioned binder layer cannot expect improvement in a performance only by the medicine in a pasting agent no longer being used effectively, and cost going up if a medicine must be added so much if it becomes thin, consequently adhesion declines and it becomes thick, its 20-300 micrometers are desirable.
[0030] As for the configuration of the percutaneous absorption pasting agent of this invention, arbitrary configurations, such as the shape of the shape of the shape of a sheet, band-like, and a patch and a roll, are adopted.
[0031] Although the above-mentioned percutaneous absorption pasting agent is cut by the predetermined configuration and it is contained and kept in package material, the material which does not penetrate oxygen as this package material, or is hard to penetrate is desirable. As such a material, the laminated film of the aluminum foil by which the front face was covered with a polyethylene terephthalate or polyethylene, a polyvinylidene chloride, and a polyvinyl chloride is mentioned, for example.
[0032] Furthermore, in order to raise the stability of a medicine content, it is desirable to enclose a deoxidant in package material. As a deoxidant, an iron system, a hydro sulfide system, an ascorbic-acid system, and a BHT (butylhydroxytoluene) system's are usable, and an age race (Mitsubishi Gas Chemical Co., Inc. make), Freshner F (Toppan Printing Co., Ltd. make), etc. are mentioned as commercial elegance.
[0033]
[Example] Below, the example of this invention is explained.
(Examples 1-5) The myristic-acid isopropyl of the specified quantity shown in Table 1 was added to the styrene-isoprene-styrene block-copolymer ("Cali FREX TR" by shell chemistry company) 80 weight section, and the alicycle group system hydrocarbon-resin ("ARUKON", tackifier) 20 weight section, mixed fusion was carried out at 115 degrees C for 5 hours, the lidocaine of the specified quantity further shown in Table 1 was added, and it mixed uniformly.

[by the Arakawa chemistry company] The obtained mixed liquor was dried for 30 minutes at an application and 60 degrees C on the polyethylene terephthalate film (40 micrometers in thickness) by which siliconizing was carried out, the binder layer with a thickness of 70 micrometers was formed, subsequently to a polyvinyl chloride with a thickness of 100 micrometers film top, the binder layer was imprinted and the percutaneous absorption pasting agent of this invention was obtained.

[0034]

[Table 1]

(重量部)

	実施例				
	1	2	3	4	5
SBS共重合体	80	80	80	80	80
脂環族系炭化水素樹脂	20	20	20	20	20
ミリスチン酸イソプロピル	60	70	100	140	100
リドカイン	30	50	60	80	100

SBS共重合体：スチレン－イソプレン－スチレンブロック共重合体

(Examples 1-4 of comparison) The myristic-acid isopropyl of the specified quantity shown in Table 2 is added to the styrene-isoprene-styrene block-copolymer ("Cali FREX TR" by shell chemistry company) 40 weight section, the alicycle group system hydrocarbon-resin ("ARUKON", tackifier) 20 weight section, and the liquid paraffin 40 weight section, mixed fusion is carried out at 115 degrees C for 5 hours, and the lidocaine of the specified quantity further shown in Table 1 is added. [by the Arakawa chemistry company] It mixed uniformly. The obtained mixed liquor was dried for 30 minutes at an application and 60 degrees C on the polyethylene terephthalate film (40 micrometers in thickness) by which siliconizing was carried out, the binder layer with a thickness of 70 micrometers was formed, subsequently to a polyvinyl chloride with a thickness of 100 micrometers film top, the binder layer was imprinted and the percutaneous absorption pasting agent was obtained.

[0035]

[Table 2]

(重量部)

	比較例			
	1	2	3	4
SBS共重合体	40	40	40	40
脂環族系炭化水素樹脂	20	20	20	20
流動パラフィン	40	40	40	40
ミリスチン酸イソプロピル	4	160	60	60
リドカイン	50	50	4	120

SBS共重合体：スチレン－イソプレン－スチレンブロック共重合体

[0036] About the percutaneous absorption pasting agent obtained in the above-mentioned example and the example of comparison, the following evaluation was performed and the result was shown in Table 3. In addition, each following evaluation was performed with the measurement size n= 3.

It is the percutaneous-absorption pasting agent obtained in the anesthesia effect test above-mentioned example and the example of comparison 10cm. 2 The sample pierced for the square (3.16x3.16cm) stuck back as for which the Hartley system guinea pig (4 weeks old, male) carried out clipping, it stimulated once by the mandrin and the existence of the contraction reaction of the skin evaluated after 10 minutes, 20 minutes, and 30 minutes based on the following criterion.

(Error criterion)

All 0:3 contraction reactions of the skin are not accepted.

The contraction reaction of the skin was accepted in one of 1:3 animals.
The contraction reaction of the skin was accepted in two of 2:3 animals.
All 3:3 contraction reactions of the skin were accepted.
** -- a contraction reaction is not accepted even if it stimulates the skin in the state of perfect anesthesia
[0037] It is the percutaneous absorption pasting agent obtained in the skin adhesive property above-mentioned example and the example of comparison 10cm 2 The sample pierced for the square (3.16x3.16cm) was stuck back as for which the Hartley system guinea pig (4 weeks old, male) carried out clipping for 30 minutes, the adhesive property was evaluated, and that from which O and peeling produced what peeling did not produce by visual observation was made into x.
[0038] It is the percutaneous absorption pasting agent obtained in the paste remaining above-mentioned example and the example of comparison on the skin 10cm 2 It exfoliated, 30 minutes after sticking the sample pierced for the square (3.16x3.16cm) back as for which the Hartley system guinea pig (4 weeks old, male) carried out clipping, and that from which O and the paste remainder produced what the paste remainder did not produce on the skin by visual observation was made into x.
[0039] It is the percutaneous absorption pasting agent obtained in the deposit above-mentioned example and the example of comparison of a crystal 10cm 2 The sample pierced for the square (3.16x3.16cm) was left at the room temperature for after [coating] 24 hours, and the existence of a crystal deposit was checked by microscope observation.
[0040]
[Table 3]

		麻酔効果			皮膚接着性	皮膚上への糊残り	結晶析出
		10分間	20分間	20分間			
実施例	1	3	2	1	○	○	なし
	2	3	2	1	○	○	なし
	3	3	1	0	○	○	なし
	4	3	1	0	○	○	なし
	5	3	1	0	○	○	なし
比較例	1	3	3	3	○	○	あり
	2	3	3	3	○	○	なし
	3	3	3	3	○	○	なし
	4	3	3	3	○	○	あり

[0041]
[Effect of the Invention] The composition of the percutaneous absorption pasting agent of this invention is as above-mentioned, since the percutaneous absorption of a local anesthetic is promoted by adding a myristic-acid isopropyl in a binder, the anesthesia effect is acquired for a short time, and, moreover, the paste remainder in a crystal deposit in a binder or the skin is not started. Therefore, it can use for the toponarcosis in front of the toponarcosis, and the dura mater and the lumbar puncture at the time of performing condition pulse detention needle processing before an operation, the arthrocentesis, and a skin monor surgery, a patient's ache is mitigated sharply, and many clinical application is enabled.

[Translation done.]